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Generation of H₂S, CO₂ and organosulfured compounds present in thermal recovery processes in oil sands, Orinoco Belt Venezuela

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The processes of thermal recovery (IAV, ICV, SAGD, among others) lead to aquathermolysis reactions occurring predominantly between 200 ° C and the range of 300-350 ° C, (Clark and Hyne ,1984). In the present investigation the experimental simulations were carried out in reactors in lines with parameters of pressure and temperature of (750 Psi, 1200Psi, 200 ° C and 300 ° C) where the Voil:Vwater is 1: 2 and sands of (95.5% SiO₂, 1.2% FeS₂ and 3.3% clay minerals, these reactions were generated in gold tubes at time intervals of 1 to 21 days. The results obtained in the present investigation show a proportional relationship between the increase of the temperature and the time of reaction in the generation of H₂S reaching concentrations of 3870 ppm related to 2.55 mL of H₂S / g.oil sand, for the generation of CO₂ as the reaction time increases decreasing the concentration until a minimum of 1.70 mL of CO₂ / g.oil sand is reached, it is important to mention that at 200 ° C the concentrations of H₂S are significantly lower (Maximum generation 0.13 mL of H₂S / g.oil sand equivalent to 212 ppm H₂S) compared to 300 ° C, which suggests possibly thermal cracking of organosulfur compounds identified (more 144 organosulfured compounds using a GCxGC TOF gas chromatograph) among them Dibenzothiophenes present in the aromatic fraction of the crude. However, the amount of H₂S generated during the vaporization process is also correlated with the amount of polysulphides (R-Sx-R) thiophenes and Tiols (R-S-H) present.

Biography

Andres Casalins is a geochemical graduate in the faculty Sciences of the Univerdad Central of Venezuela, has mas of 10 years of experience in the petroleum industry, with mas of 7 national publications and internments in the area of recovery improved of hydrocarbons specifically in studies of mechanisms of generation of acid gases, hidrogeoquimica; Actually he is a manager of the pilot scheme of alternate injection of steam (IAV) of PDVSA Sinovensa.

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